

40 CFR PARTS 110 AND 112 COMPLIANCE STRATEGIES FOR OIL-FILLED ELECTRICAL EQUIPMENT

PRESENTED BY:
JEFF SPILLYARDS
ENTERGY SERVICES, INC

USEPA REGION VI 2003 PCB CONFERENCE
ADAM'S MARK HOTEL
DALLAS, TX

KEY CONCEPT #1

- It is impossible to design a containment system for oil-filled electrical equipment in substations that will prove 100% effective, under all possible scenarios, for containing released oil when factoring in:
 - All possible release kinetics
 - Human error

KEY CONCEPT #1



Electrical Bus Fire Followed by Internal Fault

KEY CONCEPT #2

- Failure of an Oil SPCC Plan does not necessarily automatically result in an enforcement action for failure to comply with 40 CFR Part 112*. However, the owner/operator is still liable for the spill under 40 CFR Part 110.**

*--Assuming that the plan is not a “sham” plan.

**--Liability extends to ANY oil release from ANY source.

ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY --BACKGROUND

- **Entergy System service area covers approximately 100,000 square miles**
- **Entergy Services, Inc. has adopted a “zero tolerance” for unreported oil discharges from any source including:**
 - **Electrical Equipment**
 - **Hydraulic Systems**
 - **Vehicles**
- **Entergy has well over 1,000,000 oil-filled electrical devices in service**
- **Sometimes they leak**

ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY --BACKGROUND

WHAT ENTERGY'S STRATEGY IS NOT:

■ Cheap

- In 2001 Entergy's costs for oil-filled electrical equipment management totaled \$3,893,507. These costs were associated with:
 - Oil spill response to oil released from (primarily) distribution transformers
 - Processing of "leak-prone" equipment prior to transport
- This was in addition to an overall Environmental Management 2001 budget of \$1,827,222

■ Reliance on a bag of absorbents locked in a closet somewhere

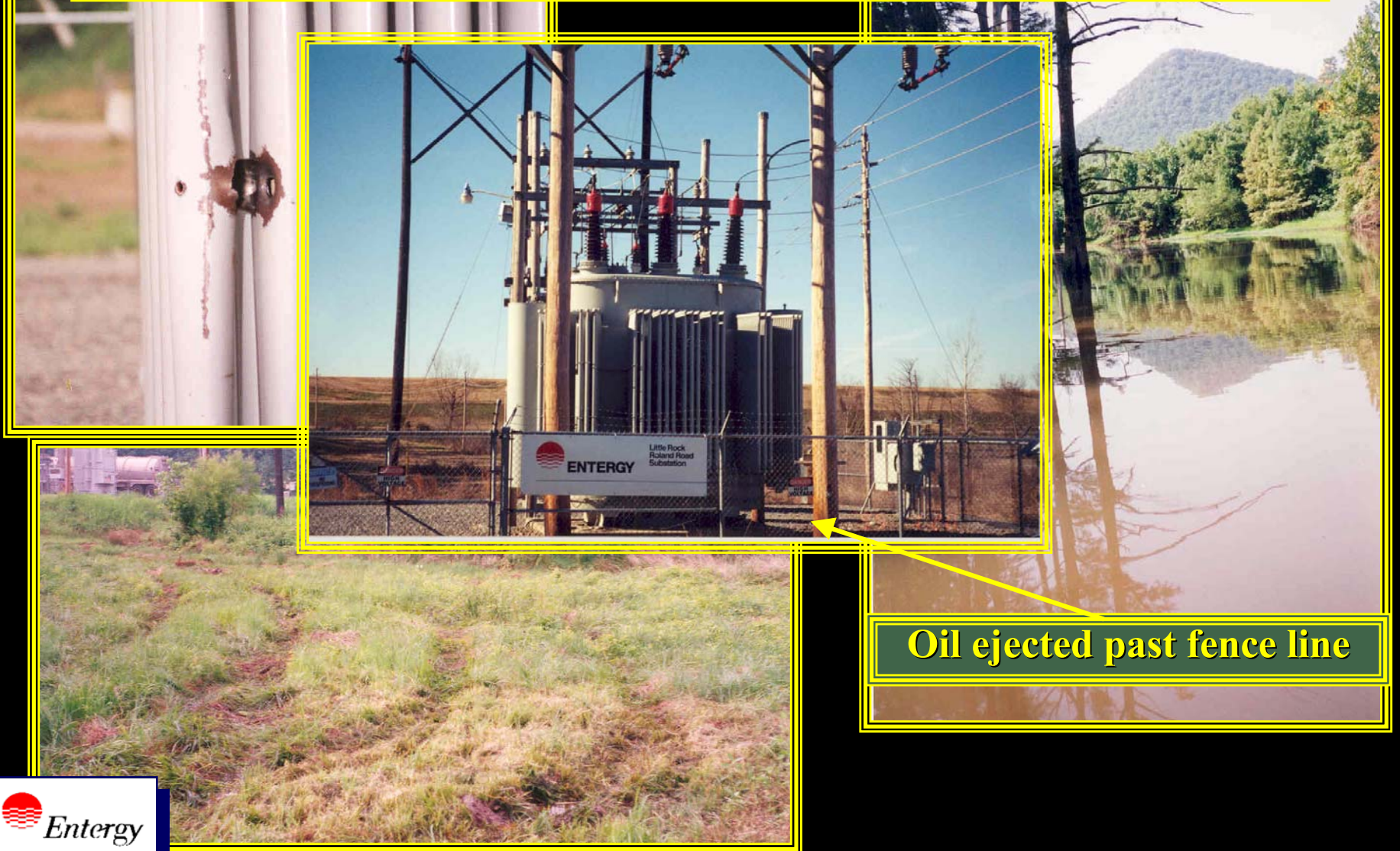
■ Reliance on "Bubba With A Broom" cleaning services to respond to oil releases

ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY --BACKGROUND

- **Prior to 1993, Entergy's strategy was largely based upon a combination of remote monitoring, preventive maintenance and utilization of environmental emergency response contractors to prevent "Part 110" dielectric fluid discharges from electrical equipment installations. This usually proved effective, given the extremely low frequency of occurrence.**

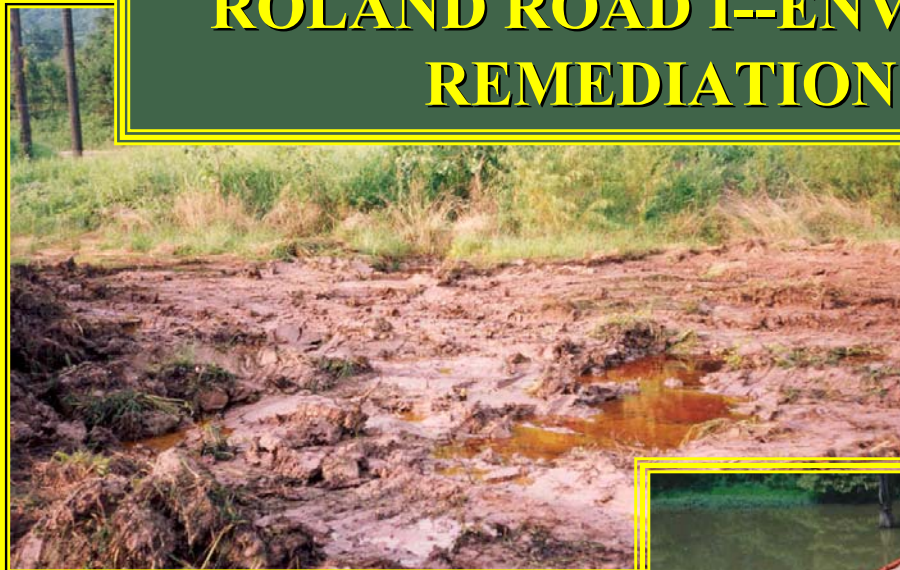
ROLAND ROAD I--AUGUST 1993

4500 Gallon Released Due to Gun Shot



Oil ejected past fence line

ROLAND ROAD I--ENVIRONMENTAL DAMAGE REMEDIATION COSTS= \$150,000+

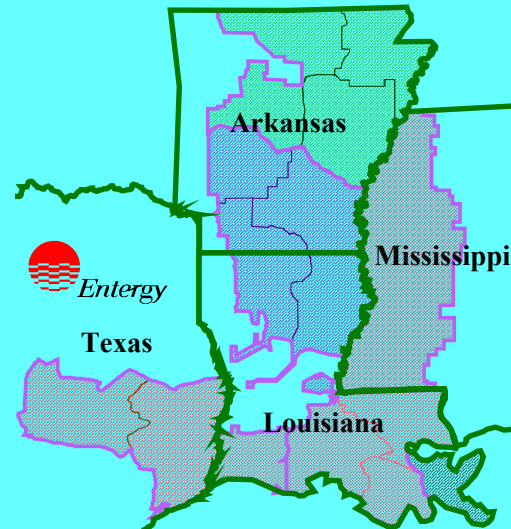


ROLAND ROAD I--ENVIRONMENTAL DAMAGE ROOT CAUSE ANALYSIS

- **Substation was not remotely monitored (via telemetry) due to inadequate telephone circuit capacity**
- **First responders (electrical workers) did not notify environmental support organization in a timely manner**
- **Information conveyed in notification was incomplete**
- **Absorbents were not available to electrical workers for initial response**
- **Remediation contractors were not properly trained**

ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY COMPONENTS --SYSTEM-WIDE PLAN

OIL-FILLED ELECTRICAL EQUIPMENT INTEGRATED OIL SPILL PREVENTION & RESPONSE PLAN FOR ELECTRICAL TRANSMISSION GRIDS AND ELECTRICAL DISTRIBUTION FRANCHISES



This Plan is NOT Used for Sites with Bulk Oil Storage--Those Sites are Addressed Under Stand-Alone Plans or with Site-Specific Addenda to the Electrical Equipment Plan

May 1998

REVISED OIL SPCC STRATEGY COMPONENTS--All Are Interdependent

IN INCREASING ORDER OF IMPORTANCE

TRAINING

- Electrical Workers
- Response Contractors

MONITORING

- Proactive:
 - SCADA
 - Inspections
 - Dissolved Gas Monitoring
- Reactive:
 - Outage Notification

SORBENTS

RESPONSE CONTRACTORS

SUBSTATION DESIGN AND EQUIPMENT DATABASES

PREREQUISITES

- STRATEGY MUST HAVE FULL ENDORSEMENT AND SUPPORT BY THE MANAGEMENT OF THE OPERATIONS GROUPS
- TRAINING AUDIENCE MUST BE EXPANDED TO INCLUDE ALL INDIVIDUALS WHO COULD BE RESPONSIBLE FOR IMPLEMENTING ANY COMPONENT OF THE STRATEGY--NOT JUST OIL-HANDLING PERSONNEL

ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY COMPONENTS

TRAINING

- Electrical Workers
- Response Contractors

ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY COMPONENTS-- TRAINING

■ ELECTRICAL WORKER TRAINING

- Oil SPCC plan training is a component of Annual Basic Environmental Awareness Training--Approximately 1.5 Hrs.
- More intensive training is presented to facility Environmental Champions--4 - 6 Hrs. Annual Refresher

■ RESPONSE CONTRACTOR TRAINING

- Oil SPCC plan requirements are communicated to response contractor management during annual conference--4 Hrs.

■ *EMPHASIS IS CONTAINMENT OF, AND PROPER RESPONSE TO, ANY OIL SPILL THAT WOULD POTENTIALLY VIOLATE THE 40 CFR PART 110 DISCHARGE PROHIBITION FROM ANY SOURCE INCLUDING:*

- *Electrical Equipment*
- *Hydraulic Systems*
- *Vehicles*

ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY COMPONENTS-- TRAINING

-----Distribution Operations

ENVIRONMENTAL STANDARD--OIL SPILL RESPONSE

(Hydraulic Fluid, Dielectric Fluid or Vehicle Fuels)

A.-- PROTECT	<ol style="list-style-type: none"> 1. Protect yourself from electrical hazards 2. Use disposable gloves, Tyvek coveralls and boot covers to protect yourself and your clothing from potential exposure to PCB oil and to minimize the spread of contamination 3. Do not drive your vehicle or walk through the spill area 4. Use law enforcement to divert traffic around oil spills on roadways
B.-- CONTAIN	<ol style="list-style-type: none"> 1. Use yard tools to create soil dams or berms to confine oil to the smallest possible area 2. Use absorbent pads contained in transformer spill kit drums or spill response trailers to absorb oil on soil, paved areas or water surfaces 3. Use absorbent booms to confine and absorb oil released in streams 4. Use absorbent materials or soil to block storm drains or culverts 5. Use plastic sheeting to cover oil spills on soil and dig diversion ditches to prevent oil being washed into storm drains by stormwater runoff
C.--NOTIFY	<ol style="list-style-type: none"> 1. <u>CONTACT ENVIRONMENTAL MANAGEMENT OR THE DOC IMMEDIATELY AND REPORT:</u> <ol style="list-style-type: none"> a. Location of spill (street, city, county or parish, and state) b. Type of surface affected (soil, gravel, water, etc.) c. Volume of oil released d. Approximate dimensions of the surface area affected e. If oil has reached a ditch, storm drain, surface water or grazing land f. PCB information such as presence of non-PCB labels or nameplates, or the results of the Clor-N-Oil test g. If the oil is on a roadway, name of road or highway number h. If incident involved fire or significant smoke i. Company number or serial number of device j. Customer's name and telephone number if known
D.--SECURE	<ol style="list-style-type: none"> 1. Use barricade tape to prevent public exposure to released oil 2. Drain, plug or place the leaking device in a drum prior to transport to the service center--DO NOT TRANSPORT A LEAKING DEVICE 3. If device cannot be drained, plugged or placed in a drum--secure it if necessary, place absorbent around the device, cover it with plastic and leave it at the spill site for processing by spill response contractors unless it poses a hazard to the public



Training is Intentionally Designed to be as Simplistic as Possible and Still Get the Points Across

ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY COMPONENTS

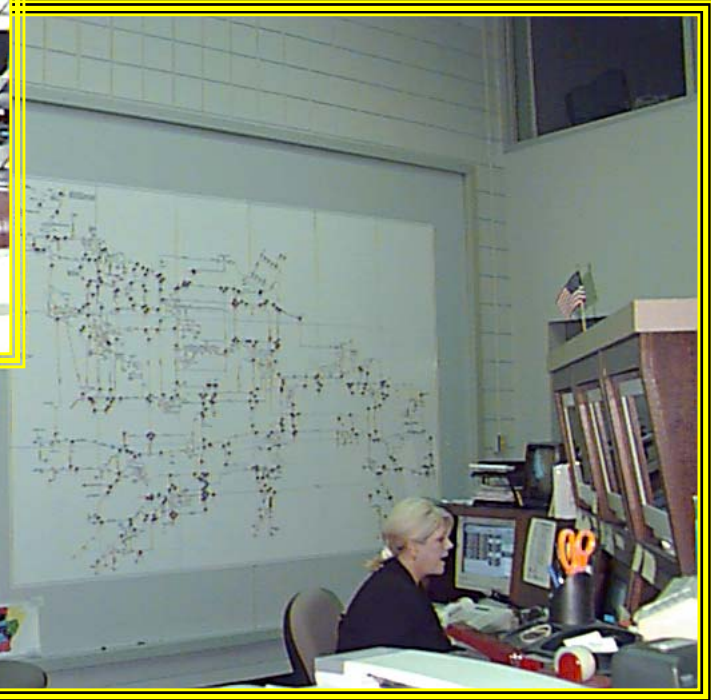
TRAINING

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ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY COMPONENTS-- MONITORING--*Little Rock Distribution Operations Center*



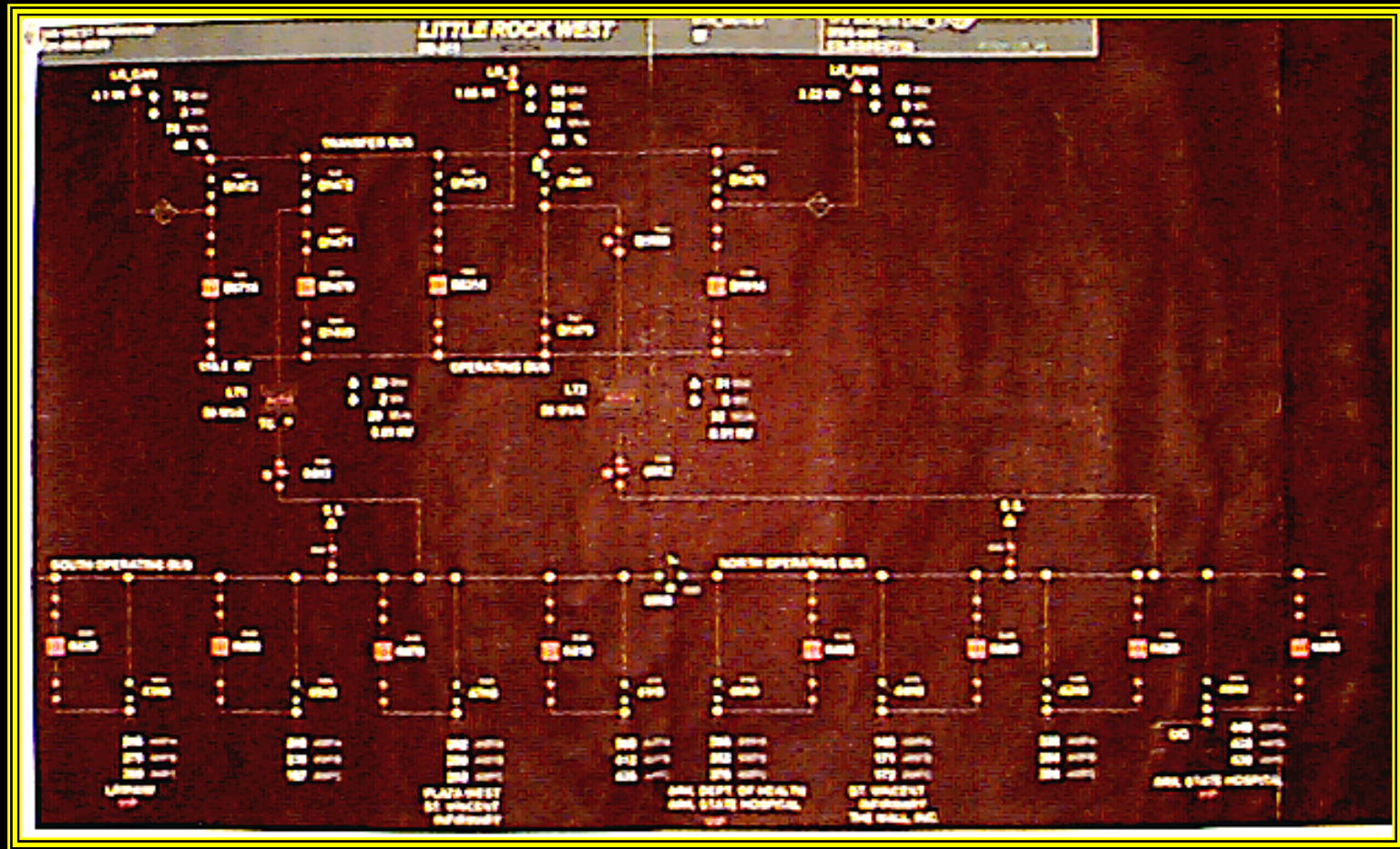
Remote Monitoring of Substations Utilizing Supervisory Control and Data Acquisition (SCADA)

NOTE: SUBSTATIONS ARE REMOTELY OPERATED USING THIS SYSTEM

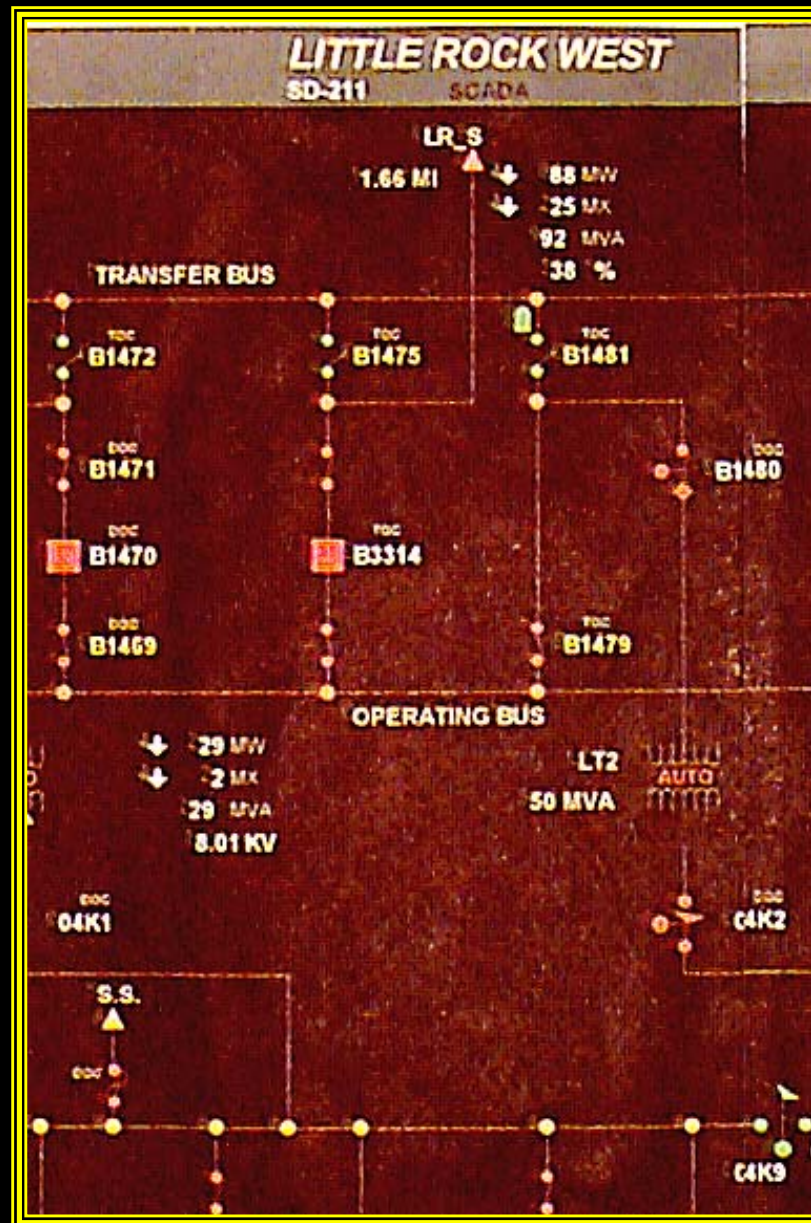
**■ Supervisory Control and Data Acquisition (SCADA)
System Alarms with Potential Environmental
Significance that Require an Immediate Call-Out**

- High Liquid Temperature
- High Winding Temperature
- Pressure Relief Device
- Low Tank Pressure
- Low Oil Alarm Of Any Kind
- Loss Of Alternating Current
- Trip Coil Failure
- Sudden Pressure Relay Trip
- Current Differential Trip

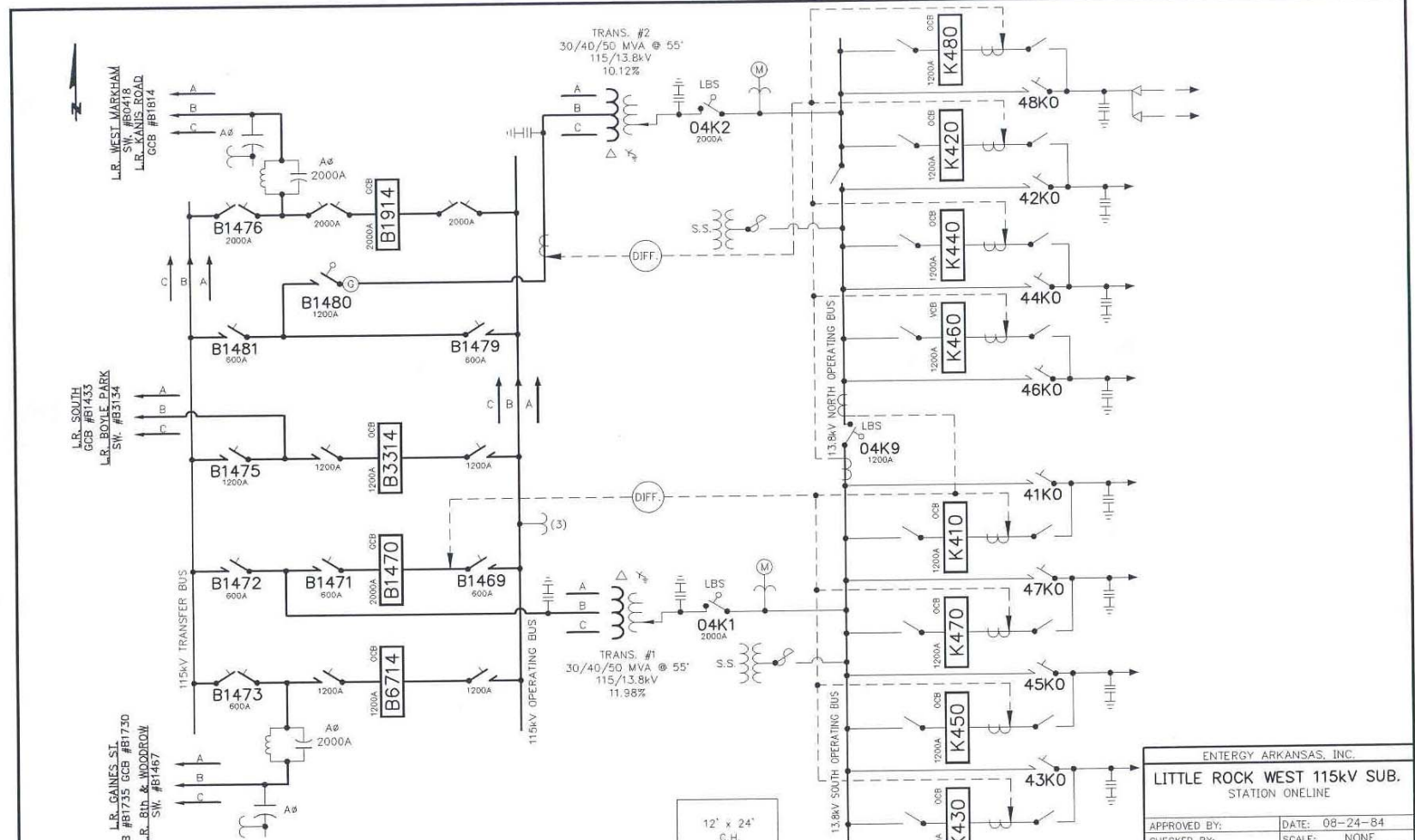
ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY COMPONENTS-- MONITORING--SCADA Monitor Screen



ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY COMPONENTS-- MONITORING--SCADA Monitor Screen



ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY COMPONENTS-- MONITORING--SCADA One-Line Substation Circuit Diagram



Systems Depicted on the SCADA Monitor Screen Directly Correlate to the Facility's
Electrical One-Line Diagram

ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY COMPONENTS-- MONITORING--SCADA Substation Alarm Screen

Display: ALLALARM Application: ALARM Family: EMS Page: 0.0,0.0 Command Type: PROJECT
Workstation: LRDDC1 Console: LRDDC1FG Viewport: HARDCOPY Capture Time: Tue Aug 27 16:43:52 2002
Title: ALLALARM,ALARM[EMS] LRSYSB (HARDCOPY) Page:1 of 1 Habitat Time: 27-AUG-2002 16:43:53



PAGE ACK

Silence

Alarm Summary



PAGE DELETE

Alarm List is
0 % Full

AUG 27 2002 /16:40:42	<input checked="" type="checkbox"/> HRSBRG	BLDING INTRUDER	BURGLAR ALARM	INTRUDER	CHG-DET
AUG 27 2002 /15:44:42	<input checked="" type="checkbox"/> WARNWS	OCB L461	BKV HI LIM EXCEEDED		
AUG 27 2002 /15:36:16	<input checked="" type="checkbox"/> HRSN_W	OCB S211 VIP	CLOSED		
AUG 27 2002 /15:01:33	<input checked="" type="checkbox"/> LR_MAR	GCB G915 VIP	SET FOR	AUTO	

ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY COMPONENTS

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 - Outage Notification

SORBENTS

ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY COMPONENTS-- SORBENTS--*Spill Response Trailer*



**Trailers are Inspected and Inventoried Annually If Not Used.
Materials are Replaced as Depleted When Used**

ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY COMPONENTS-- SORBENTS--*Trailer Inventory List and Consumable Supply Order Form*

Item	Description	Quantity Needed
SPC50	34" X 38" Pads (50/box)	4 bx
SPC810	8" X 10' Boom (4/box)	6 bx
SPC150	38" X 144' Absorbent Roll (1/box)	4 bx
SPC818	Bilge Boom 8" X 18" (10/box)	4 bx
0153150	Gloves—Size 10 Chemipro (12/box)	2
0101022	Gloves—Large Conform (100/bx)	1
1204221	Saranex Coveralls—XL	1 cs
3861515	Plug N Dike (4/cs)	1 cs
3861509	Saranex Boot Covers---14"	1 cs
386-Bag	6 mil Unprinted Trash Bags	1 bx
	4 mil Poly Sheeting (Complete Roll)	1 ea
3850207	Duct Tape	2 ea
3850236	Barricade Tape	2 ea
AE504	Drum/Tank Repair Kit	1 ea
	Hollow Braid Poly Rope—100'	1 ea
	Reflective Traffic Warning Triangles (3/kit)	1 kt
386-Liner	8-mil Drum Liner	2 ea
Ship To:		Bill To:
Company Name:	Entergy Environmental Management P.O. Box 551, TCBY-20F 425 W. Capitol Little Rock, AR 72203 Attn: Jeff Spillyards Telephone: Voice: 501/377-3951 Fax: 501/377-4041	
Facility Name:		
Shipping Address:		
City:		
State:	Zip Code:	
Attn:	Telephone No.	

FAX ORDER TO:
1-800-326-3245
Attn: Barb

American Health & Safety, Inc.
P.O. Box 46340/6250 Nesbitt Road
Madison, WI 53744-6340
Voice: 1-800-522-7554

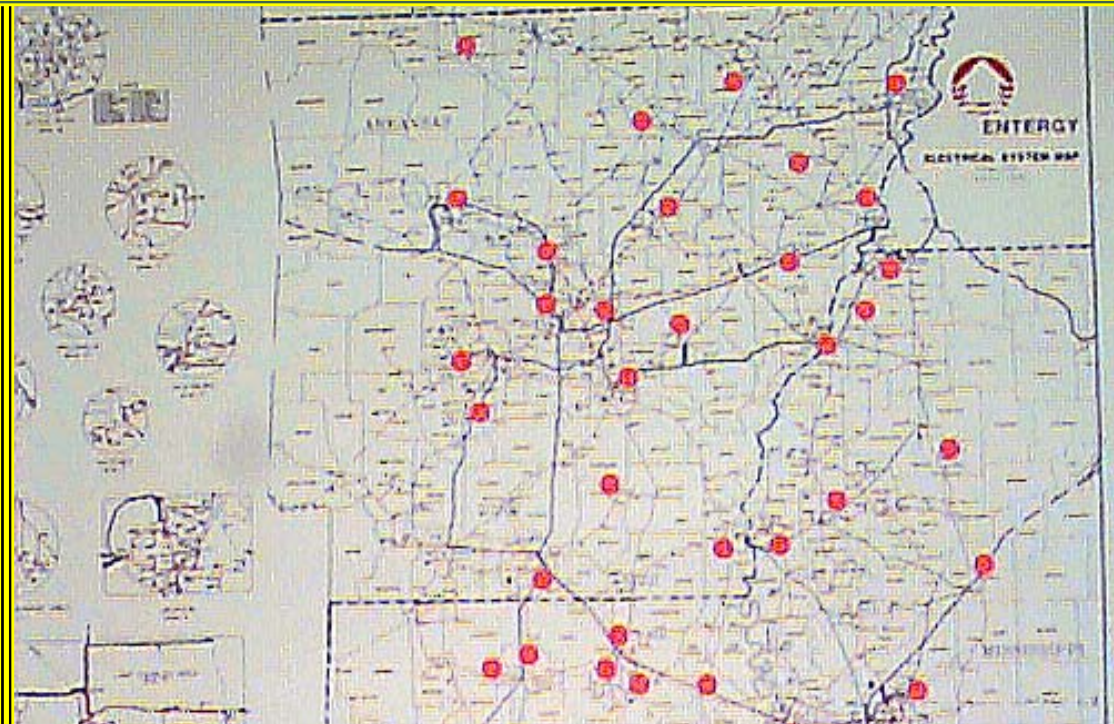
OIL SPILL RESPONSE TRAILER INVENTORY LIST

Hardware	Personal Protective Equipment
shovel-scoop	Saranex coveralls (XL)
shovel-round point	latex gloves
rake	neoprene/latex overgloves
yard broom	Saranex Boot Covers
mattock	
poly tarp (20'X30')	Absorbents
axe	8" X 10' absorbent boom---3 cases (120 ft. total)
trash bags (55 gallon)	36" X 36" absorbent pads---1 case
wrench (15/16" X 1"box end)	36" X 150' roll
wrench (12" adjustable)	chopped particulates---3 bags
hammer (2.5 lb)	soaker pigs---2 cases
tape measure (100 ft.)	
rope (nylon 100')	
knife (safety)	
nylon twine	
traffic warning triangles	
wooden stakes	
rebar 4'	
ditch blade	
metal fence posts	
post driver	
compass	
chickenwire	
visqueen	
drum repair kit	
Plug-n-Dike	
barricade tape	
duct tape	



ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY COMPONENTS

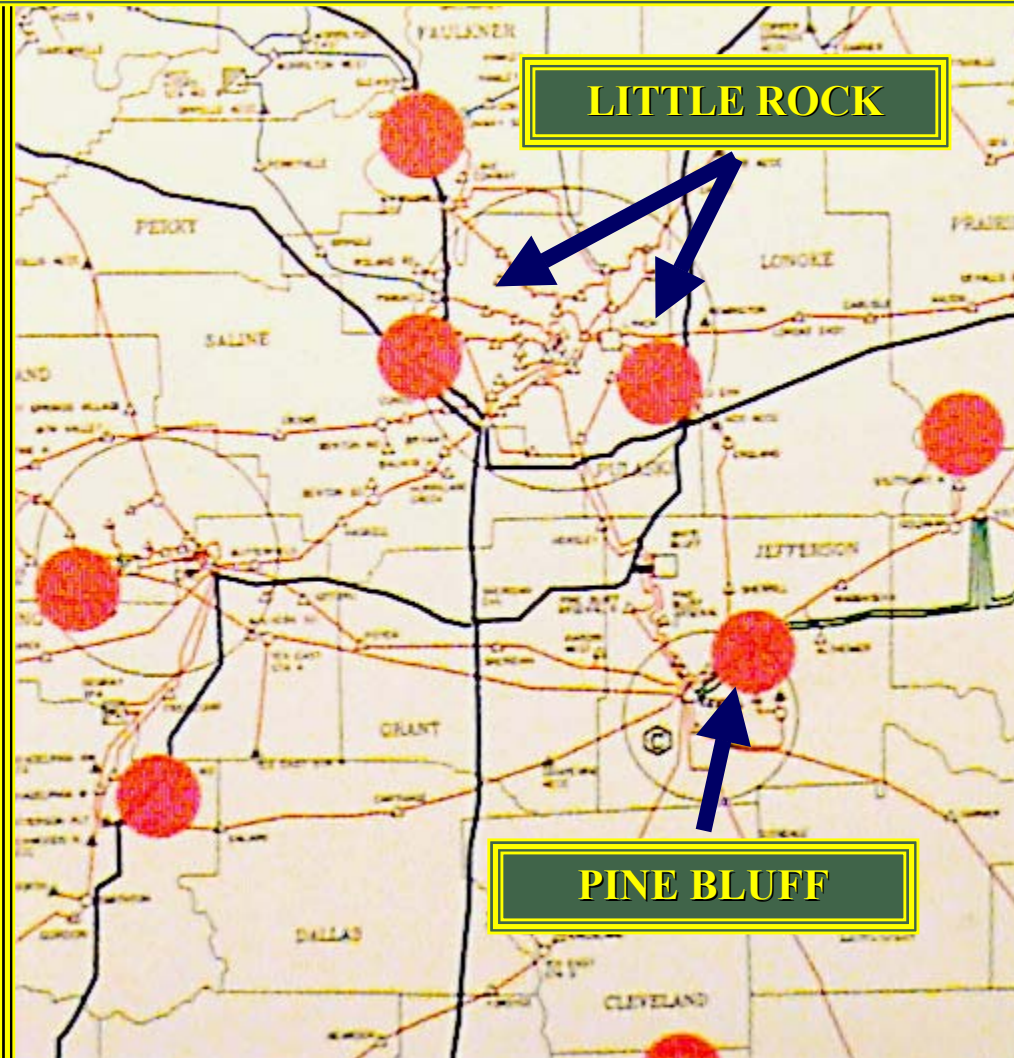
--SORBENTS--SPILL RESPONSE TRAILER STAGING LOCATIONS



**GULF COAST INDUSTRIAL CORRIDOR--LESS
MOBILIZATION TIME FOR SPILL CONTRACTORS**



ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY COMPONENTS
--SORBENTS--SPILL RESPONSE TRAILER STAGING LOCATIONS
GOAL OF A MAXIMUM OF A 1-HOUR RESPONSE RADIUS OF EACH LOCATION



ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY COMPONENTS
--SORBENTS--SPILL RESPONSE TRAILER STAGING LOCATIONS
GOAL OF A MAXIMUM OF A 1-HOUR RESPONSE RADIUS OF EACH LOCATION



ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY COMPONENTS

TRAINING

- Electrical Workers
- Response Contractors

MONITORING

- Proactive:
 - SCADA
 - Inspections
 - Dissolved Gas Monitoring
- Reactive:
 - Outage Notification

SORBENTS

RESPONSE CONTRACTORS

ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY COMPONENTS-- RESPONSE CONTRACTORS

PRIMARY RESPONSE CONTRACTORS ARE HEADQUARTERED IN:

- **Little Rock, Arkansas**
- **Jackson, Mississippi**
- **Monroe, Louisiana**
- **Baton Rouge, Louisiana**
- **New Orleans, Louisiana**
- **Lake Charles, Louisiana**
- **Port Allen, Louisiana**
- **Jennings, Louisiana**
- **Beaumont, Texas**
- **Conroe, Texas**



Response Contractors Utilized are Under Support Contracts with Entergy

ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY COMPONENTS

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SORBENTS

RESPONSE CONTRACTORS

SUBSTATION DESIGN AND EQUIPMENT DATABASES

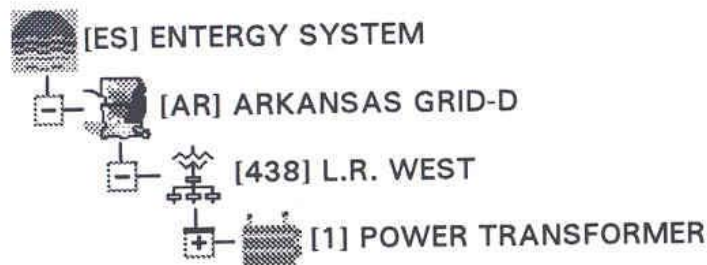
ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY COMPONENTS-- SUBSTATION DESIGN AND EQUIPMENT DATABASES--*Yard Design Standards*

ENTERGY SUBSTATION DESIGN STANDARDS SPECIFY:

- **Yard Grade Of 0.5-1.0% For Storm Water Drainage**
- **SB-2 (Or Equivalent) Gravel Bed Of 5-Inch Depth**
- **The Need For Physical Oil Containment Systems For New Construction (Typically Displacement Sumps) Are Evaluated On A Case-By-Case Basis**

Very Little Variation in Site Drainage Contours for Small Substations--*Most Variation is in Surrounding Topography Outside of the Facility Boundary*

ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY COMPONENTS-- SUBSTATION DESIGN AND EQUIPMENT DATABASES--*DSWMS*



Substation: Component: L.R. WEST Sub Position: 438

Substation Information...

Company: Arkansas Power and Light ... Region: NORTHERN ...

State: ... District: LITTLE ROCK ...

County/ ... Operating TOC: Little Rock ...

Parish: ... Operating OIC: Little Rock ...

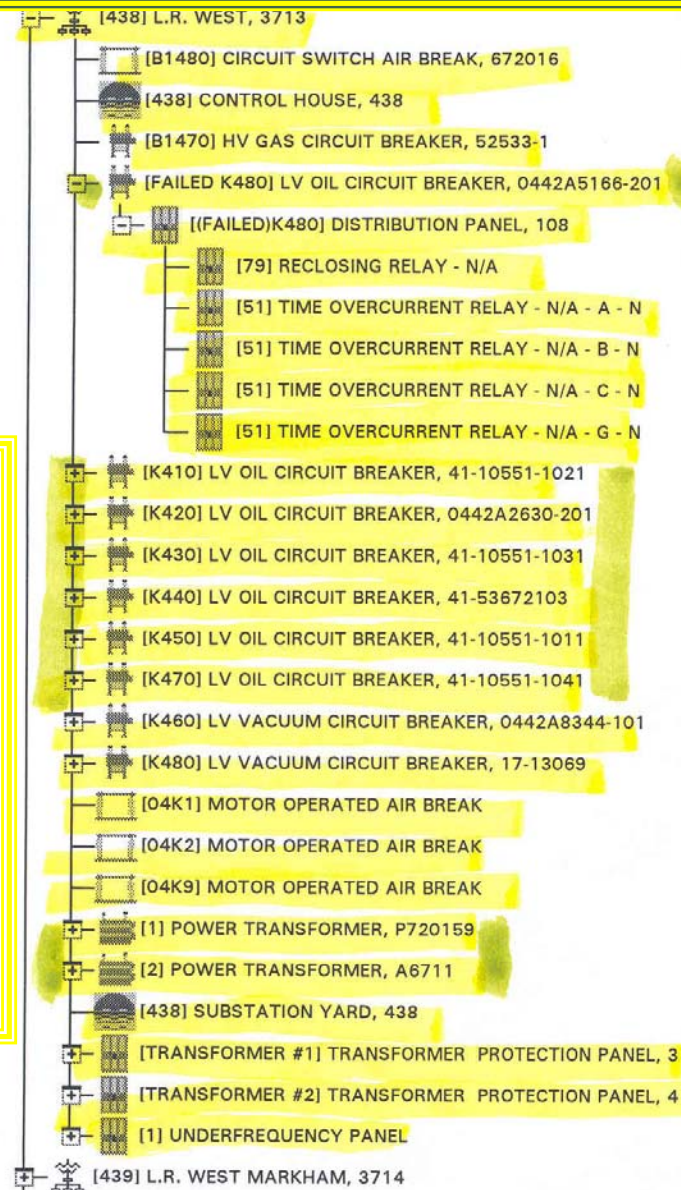
Grid: ARKANSAS ...

GPS Latitude: 34.756593 N Customer Survey Name: West Lr

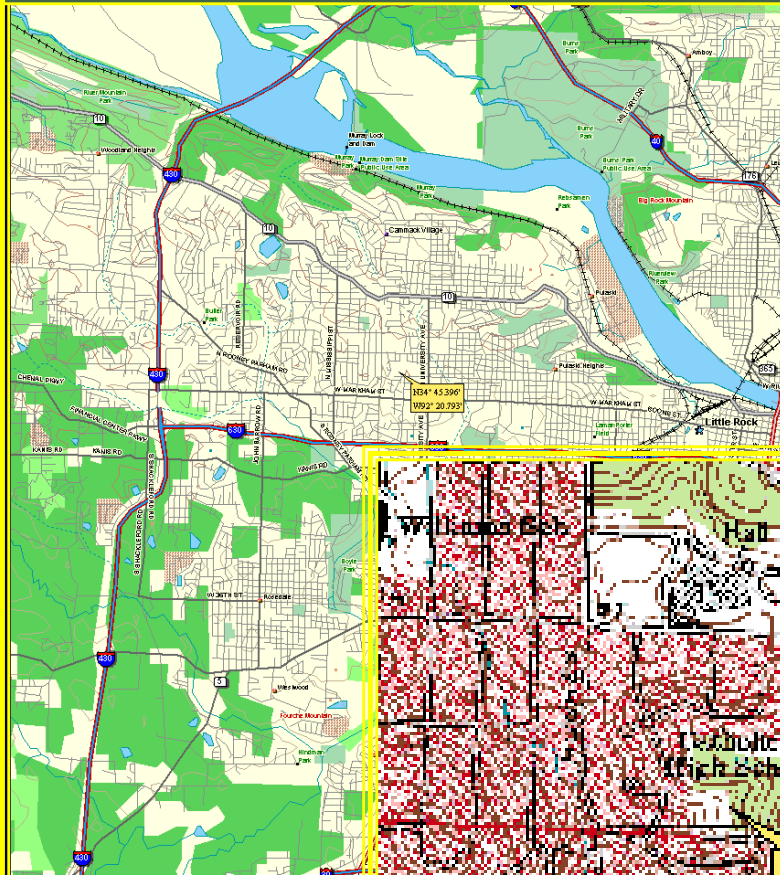
GPS Longitude: -92.346554 W System Planning Name: L.R.-West

Fault Current...

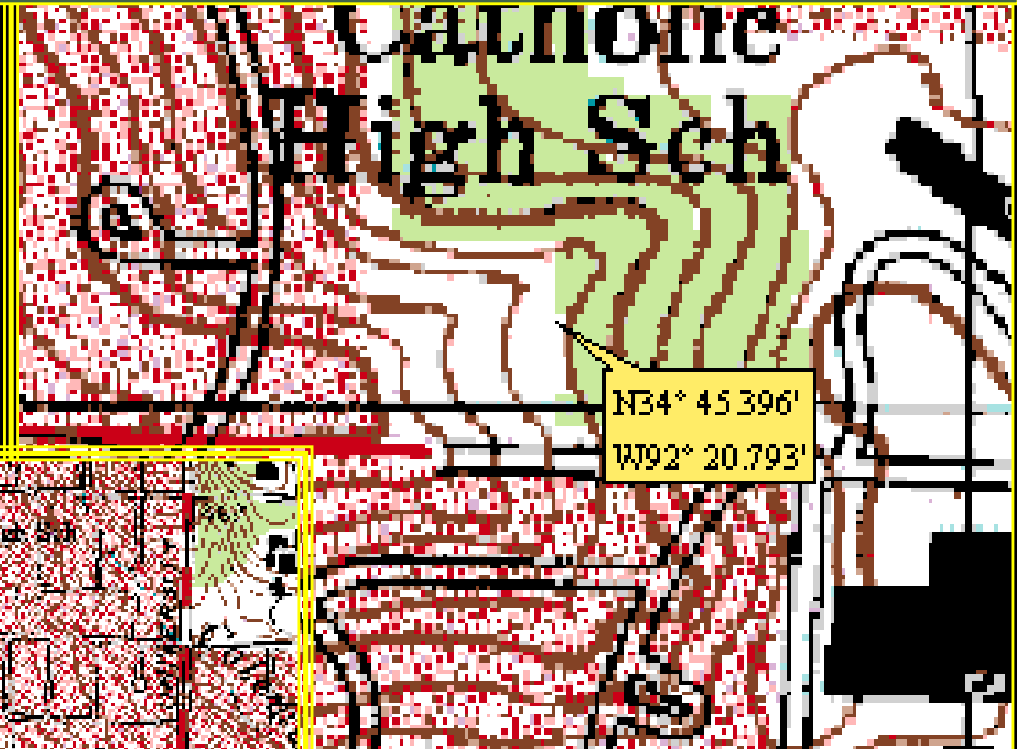
Bus Number	Voltage	3LG(A)	2LG(A)	1LG(A)	X+(pu)
2277	115	17,186.2	15,847.2	11,459.7	0.02902



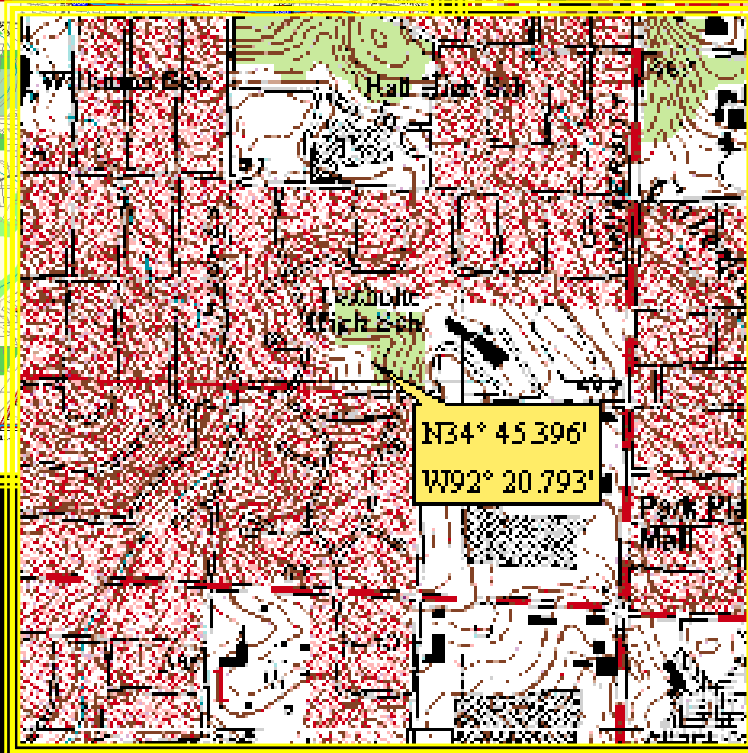
ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY COMPONENTS-- SUBSTATION DESIGN AND EQUIPMENT DATABASES--*Delorme 3-D TopoQuad*



Copyright © 2000 Delorme, TopoQuest Advanced Relief File. Scale: 1 : 62,500. Zoom Level: 1



N34° 45.396'
W92° 20.793'



N34° 45.396'
W92° 20.793'

ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY COMPONENTS-- SUBSTATION DESIGN AND EQUIPMENT DATABASES--DSWMS

Substation: L.R. WEST Component: POWER TRANSFORMER Sub Position: 1

Equipment Data...

Company: Arkansas Power and Lig Division: LITTLE ROCK

Region: NORTHERN

Manufacturer: Moloney Electric Date of Mfg.: 01/01/1972 Now

Instruction: NPA 5326 Date Installed: 05/16/1973 Now

Book No.: Type: LTC Availability: In Service

Application: Distribution-XFMR

Manufacturer Data...

Design: T-149 Catalog:

No.: No.: Drawing: 4A5003

Model: No.: Outline Dwg. No.: 4D5580

Style: Cost: 133,710.00

Mfg. Shop Order No.: 260516 PO No.: 05277 Requisition: 33712

WA/WO No.: 68,305

Maintenance Data...

Reliability Centered Maintenance...

Critical:

Tier:

General Comment:

RCM Rank: High

Override RCM Rank?

Override Justification:

Last Overridden by:

Date:

Substation: L.R. WEST Component: POWER TRANSFORMER Sub Position: 1

Transformer Data...

Rated Voltage: 115

Peak Load: 41.30 MVA T: 1 PF: .98

Max Fault I:

kV High kV Low kV Tertiary
KV Rating: 110.00 13.86 .00

MVA 1 MVA 2 MVA 3 Impedance (%Z)
Rating @ 55C: 30.00 40.00 50.00 11.98

Rating @ 65C: .00 .00 .00 .00

Transformer Data...

Phases: 1 3 Winding Condition: Not Inspected
Loose
Tight

BIL Hi: 550.00

BIL Lo: 110.00

Life Comments:

Connection: D-Y Life Date: 00/00/0000 Now

Transformer Data...

High Side Tap Positions:

1/A 115,500.00 2/B 112,750.00 3/C 110,000.00
4/D 107,250.00 5/E 104,500.00 6/F .00

Present Tap Position: 2

Oil Preserve System: G

Core Construction: UNKNOWN

Fuse Protected:

Shipping Data...

Shipping Height: .00 Weight Core/Coils: 81,400.00

Oil (Gallons): 8,440.00 Weight Tank/Fittings: 60,850.00

Load Tap Changer (Gallons): 400.00 Untanking Weight: 81,400.00

Oil Weight: 60,421.96 Total Weight: 208,550.00



ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY COMPONENTS-- SUBSTATION DESIGN AND EQUIPMENT DATABASES--DSWMS

Substation: L.R. WEST Component: POWER TRANSFORMER Sub Position: 2

Equipment Data...

Company: Arkansas Power and Lig Division: LITTLE ROCK

Region: NORTHERN

Manufacturer: RTE/ASEA Date of Mfg.: 02/01/1983 Now

Instruction: A6711 Date Installed: 05/16/1984 Now

Book No.: Type: LTC Availability: In Service

Application: Distribution-XFMR

Manufacturer Data...

Design: Catalog:

No.: No.: Drawing: Comments

Model: No.: Outline: A6711T501283X

Style: Dwg. No.: Cost: .00

Mfg. Shop Order No.: 801-6711

PO No.: 84540 Requisition: 71401

WA/WO No.: 68,300

Maintenance Data...

Reliability Centered Maintenance...

Critical:

Tier:

General Comment:

RCM Rank: High

Override RCM Rank?

Override Justification:

Substation: L.R. WEST Component: POWER TRANSFORMER Sub Position: 2

Transformer Data...

Rated Voltage: 115 115

Peak Load: 43.70 MVA T: 2 PF: .97

Max Fault I:

kV High kV Low kV Tertiary

KV Rating: 112.75 13.80 .00

MVA 1 MVA 2 MVA 3 Impedance (%Z)

Rating @ 55C: .00 .00 .00 .00

Rating @ 65C: 30.00 40.00 50.00 10.12

Transformer Data...

Phases: 1 3 Winding Condition: Not Inspected

BIL Hi: 450.00

BIL Lo: 110.00

Life Comments:

Connection: D-Y

Life Date: 00/00/0000 Now

Transformer Data...

High Side Tap Positions:

1/A 118,250.00 2/B 115,500.00 3/C 112,750.00

4/D 110,000.00 5/E 107,250.00 6/F .00

Present Tap Position: C

Oil Preserve System: G

Core Construction: UNKNOWN

Fuse Protected:

Shipping Data...

Shipping Height: 156.00 Weight Core/Coils: 69,400.00

Oil (Gallons): 6,015.00 Weight Tank/Fittings: 41,700.00

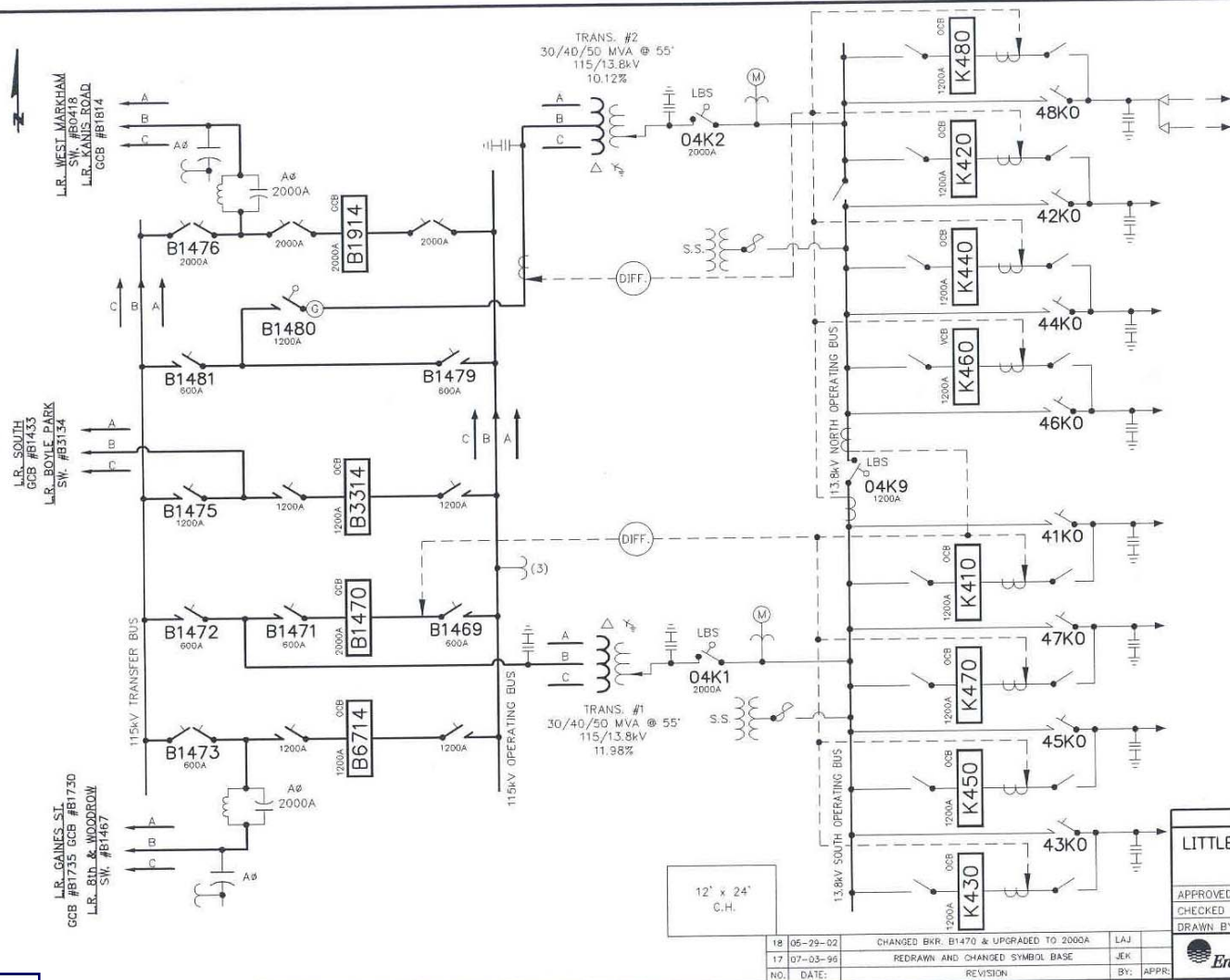
Load Tap Changer (Gallons): 100.00 Untanking Weight: 69,400.00

Oil Weight: 43,061.39 Total Weight: 156,300.00



SCADA-Accessible One-Lines Directly Correlate to DSWMS Data

ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY COMPONENTS-- MONITORING--SCADA One-Line Substation Circuit Diagram



ENTERGY ARKANSAS, INC.			
LITTLE ROCK WEST 115kV SUB. STATION ONELINE			
APPROVED BY:	DATE: 08-24-84		
CHECKED BY:	SCALE: NONE		
DRAWN BY: JLB	REGION: NORTHERN		
		No. A3713S01	
		PLOT 1=1	SH. 1 OF 1

18	05-29-02	CHANGED BKR. B1470 & UPGRADED TO 2000A	LAJ	
17	07-03-96	REDRAWN AND CHANGED SYMBOL BASE	JEK	
NO.	DATE:	REVISION	BY:	APPR:

ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY COMPONENTS-- SUBSTATION DESIGN AND EQUIPMENT DATABASES--DSWMS

Substation Maintenance Work Request

Date Printed: 08/30/2002 14:41

Work Request #: 546146

Component ID: LTC-1

Location: L.R. WEST		Observed: 04/09/2001 11:51	WR Priority: 3
Project Code (CEA/EJO): Y20438	Activity Code: PMES	Organization Charged Code:	
Physical Location Code: DSA		<input type="checkbox"/> Loaned Labor	

Component: LOAD TAPCHANGER

Serial Number: P720159

Manufacturer: Moloney Electric

Equipment Type: TC-MA

Request Status: New Request

Creator: Bratton, Rodney H

Condition: Routine

Schedule Date:

Due Date: 04/09/2003

Estimated Hours: 10.00

Total Actual Hours: 0.00

Source Computer: Host

AORS Request #:

Comp. Comments:

Problem Description: This Work Request was generated FROM the RCM Task Trigger Evaluation look-ahead feature

Requested By:

Action Taken:

Cause:

Comments/Variance Explanation:

Tasks:

Description	Switching Required	Regular Hrs	Overtime Hrs	Crew	Skip Task Action	Task Type	Action Taken
Internal Maintenance	<input checked="" type="checkbox"/>	0.00			None	PM	

Start Date:

Completed:

Percent Completed:

Completed By:

Maintenance Area: Luther-Central



ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY COMPONENTS-- SUBSTATION DESIGN AND EQUIPMENT DATABASES--DSWMS

Substation: L.R. WEST Component: LV OIL CIRCUIT BREAKER Sub Position: K470
Equipment Data...

Company: Arkansas Power and Lig Division: LITTLE ROCK

Region: NORTHERN

Manufacturer: ITE Electric Date of Mfg.: 01/01/1973

Instruction: 051L002-04 Date Installed: 00/00/0000

Book No.: Type: 14.4-KS-500-12D Availability: In Service

Application: Distribution-Industrial

Manufacturer Data...

Design No.: Catalog No.:

Model: Drawing No.:

Style: Outline No.:

Mfg. Shop Order No.: Cost: .00

PO No.: 14641 Requisition:

WA/WO No.:

Maintenance Data...

Reliability Centered Maintenance...

Critical: ☒

Tier: 2

RCM Rank: High

Override RCM Rank? ☐

General Comment: 

Override Justification:

Last Overridden by:

Date:

Substation: L.R. WEST Component: LV OIL CIRCUIT BREAKER Sub Position: K470

Breaker Data...

Rated Voltage: 13.8

Interrupting KA Rating: 18.00 Continuous Amps: 1,200.00

MVA Rating: 500.00 Pounds of Sf6 Gas: .00

Interrupting Cycle: 05 MW: 7.90 MVA

Trip Voltage: Perceived Reliability: 1

Close Voltage: Switch Gear:

CUSTOMERS SERVICED FROM FEEDER--
*Service Outage Reports from Customers Provide
Additional Reactive Monitoring System for
Reporting Electrical Equipment Malfunction*

Usage Data...

Feeding Bus1:

Feeding Bus2:

Feeding Transformer: L.R. WEST[1] ER TRANSFORMER

Number of Customers: 482 Franchise: NORTHERN

Major Customers: Network: West Markham

Substation: L.R. WEST Component: LV OIL CIRCUIT BREAKER Sub Position: K470
Oil Circuit Breaker Data...

Gallons Per Tank: 76.00

1 3

Total Gallons: 76.00



ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY COMPONENTS-- CONTAINER AND EQUIPMENT LEAK INSPECTIONS--*Planned Testing & Inspection Strategy*

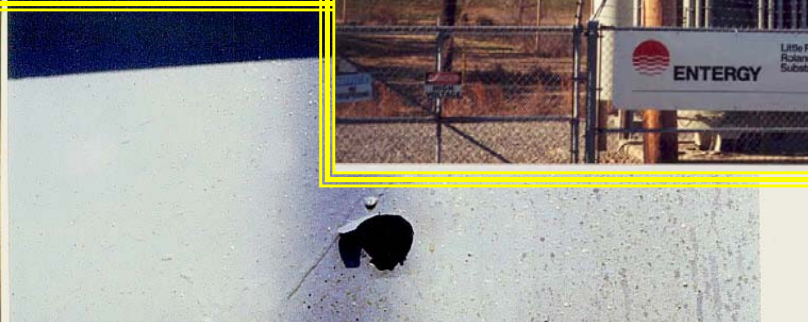
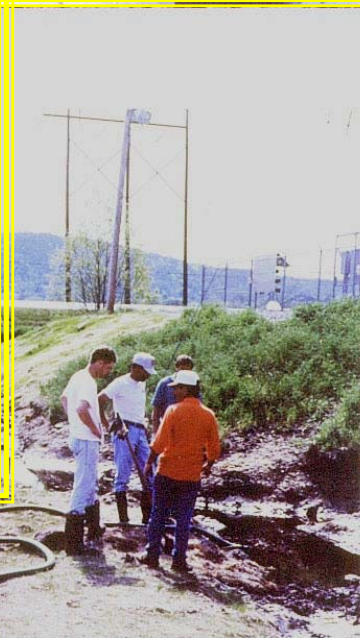
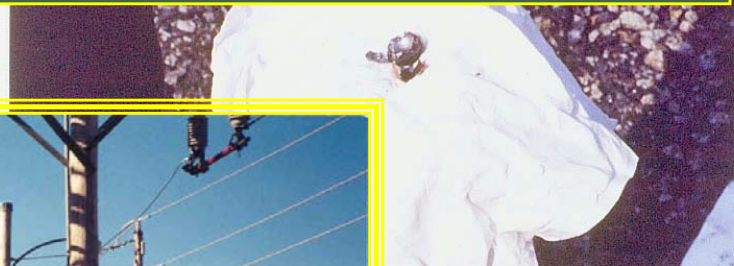
- DOCUMENTED MONTHLY VISUAL LEAK INSPECTIONS*
- DOCUMENTED ULTRASONIC TEST INSPECTIONS EVERY 5 YEARS
- DOCUMENTED INTERNAL INTEGRITY INSPECTIONS EVERY 20 YEARS
- CONTAINERS AND EQUIPMENT STORED IN HIGH TRAFFIC AREAS (SERVICE CENTER YARDS) MUST HAVE DOCUMENTED LEAK INSPECTIONS WEEKLY*
- PIPING SYSTEMS SHOULD BE INSPECTED FOR LEAKS WEEKLY*

**--Currently conducted*



TESTING THE STRATEGY: ROLAND ROAD II--APRIL 1994

Approximately 1500 Gallons Released Due to Gunshot



*All Released Oil Was Contained At the Base of Substation Fill. Response
Action Cost= ~\$8000*

ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY COMPONENTS-- TESTING THE STRATEGY--*Gunshot Damage*

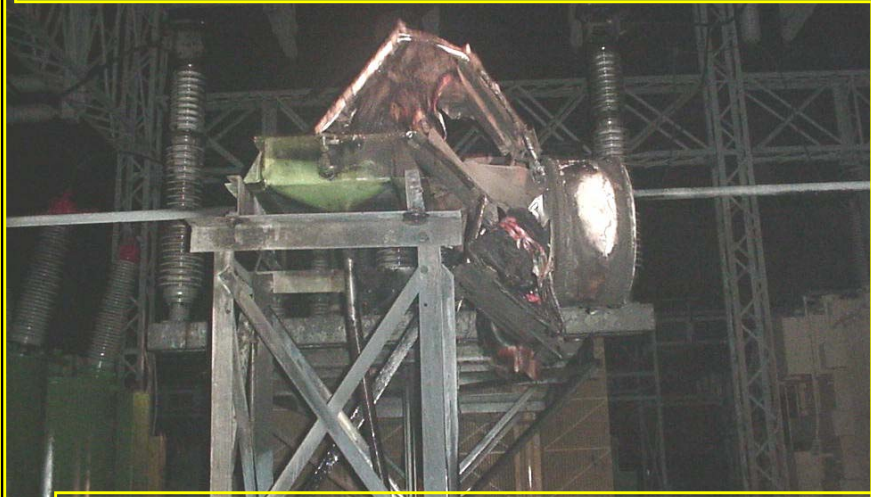


Note: Physical Containment Structures can Prevent Access of Mobile Equipment in the Event of a Device Failure



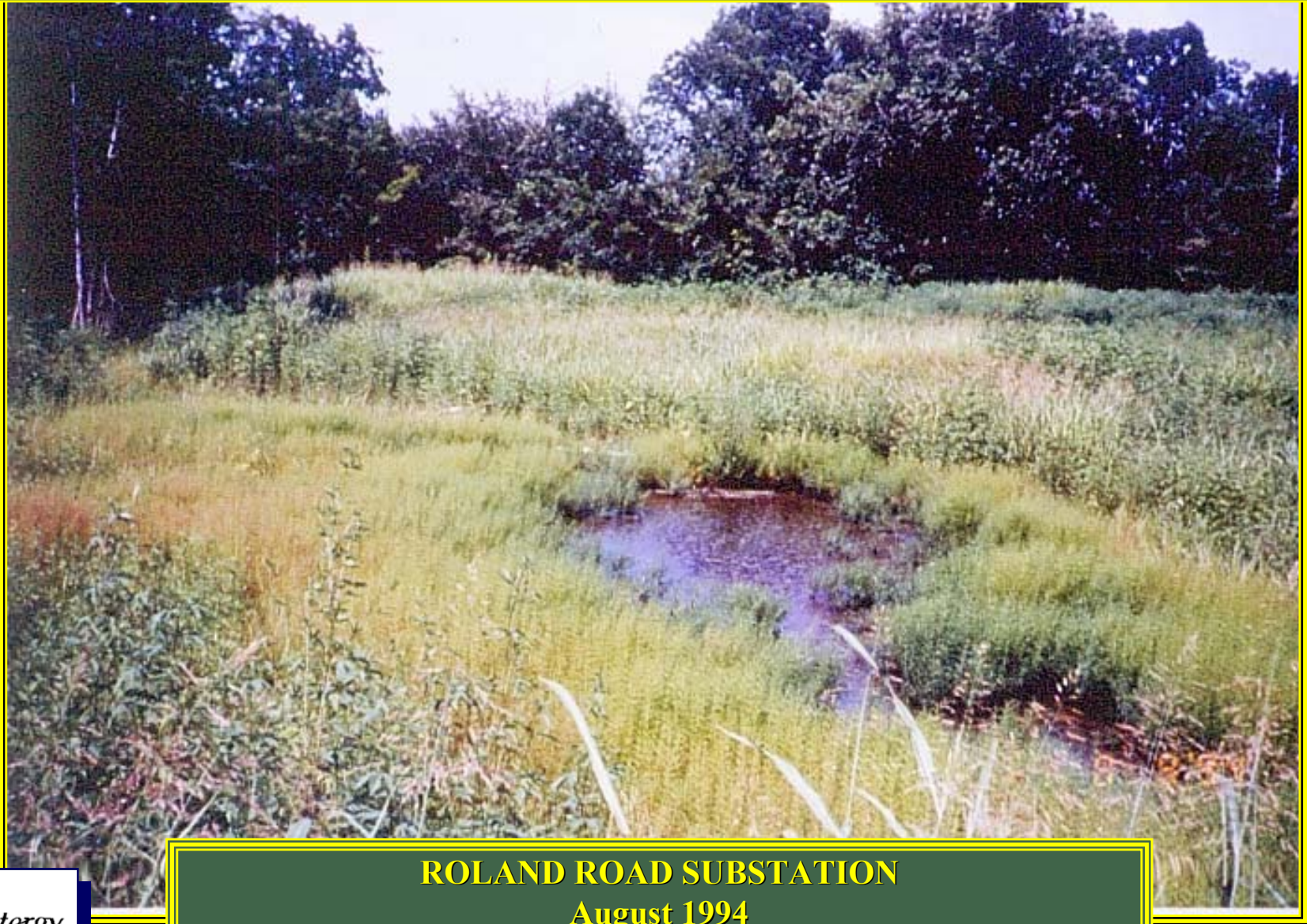
MALVERN EAST AND WARREN SUBSTATIONS
All Released Oil Was Contained On-Site

ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY COMPONENTS-- TESTING THE STRATEGY--PT Failure



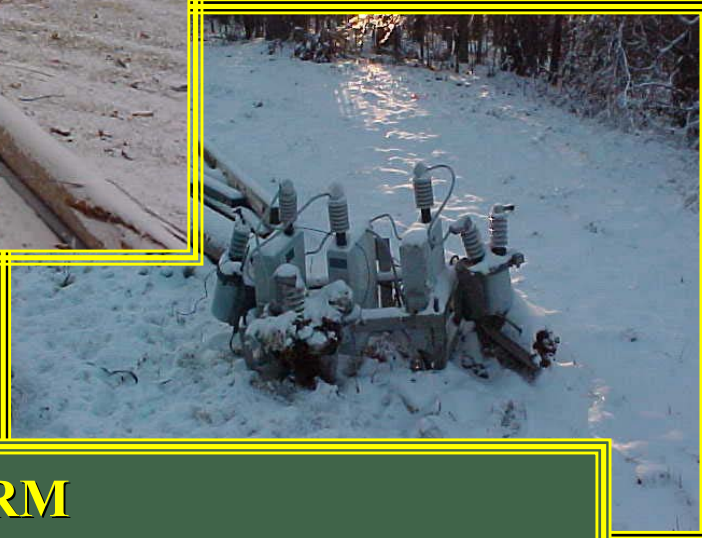
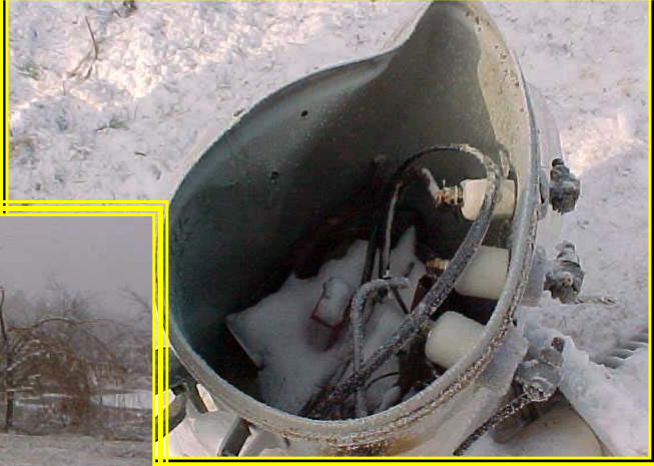
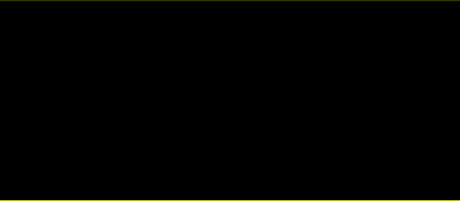
OAK VILLAGE SUBSTATION, BATON ROUGE
All Released Oil Was Contained On-Site

ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY COMPONENTS-- TESTING THE STRATEGY



ROLAND ROAD SUBSTATION
August 1994

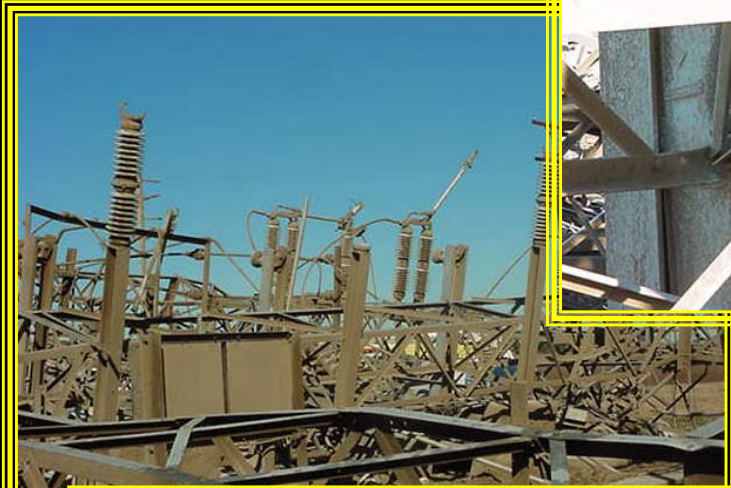
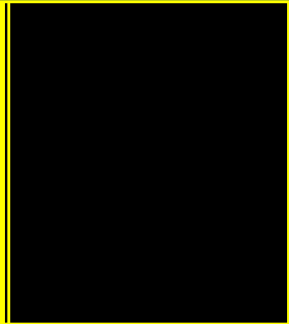
ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY COMPONENTS-- ANCILLARY BENEFITS--*Storm Response Capabilities to “non-Part 112” sites*



2000-2001 ICE STORM

Approximately 100 Response Contractor Personnel
Handled Approximately 600 Damaged Transformers

ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY COMPONENTS-- ANCILLARY BENEFITS--*Storm Response Capabilities*



TORNADO DAMAGED SUBSTATION Mississippi Grid

ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY COMPONENTS-- ANCILLARY BENEFITS--*Accident Response Capabilities to “non-Part 112” sites*



VEHICLE ACCIDENTS

ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY COMPONENTS-- CHALLENGES



**Daily Movement of Electrical Equipment In and Out of Facility Results
in Total Oil Volume at the Facility Continually Changing**



**Determining “WHAT’S IN AND WHAT’S OUT” For The Electrical
Equipment Storage Facilities Potentially Subject To Part 112 Is Going To
Be Difficult**

ENTERGY OIL-FILLED ELECTRICAL EQUIPMENT SPCC STRATEGY COMPONENTS-- CHALLENGES

1 GALLON/kVA Assumption is Not Always Accurate

200 kVA

100 kVA

167 kVA

Determining “WHAT’S IN AND WHAT’S OUT” For Electrical
Equipment Potentially Subject To Part 112 Is Going To Be Difficult

QUESTIONS TO CONSIDER IN STRATEGY DEVELOPMENT:

- **What are the States Professional Engineer Licensing Boards' reciprocity restrictions for SPCC plans certified by a P.E. outside of the State of plan implementation, and Board restrictions on delegation of P.E. authority?**
- **For electric utility-owned/operated equipment containing 55 gallons or more of oil installed at customer locations that have other oil storage/usage where the utility and customer aggregated volumes exceed 1320 gallons--who develops the plan? What about compliance with OSHA regulations?**

P.E. DELEGATION OF ATTESTATION--INFORMATION COLLECTION

Substation SPCC Assessment Form

(All questions apply to equipment containing 55 gallons or more)

Substation Name: _____

Location: _____ Lat./Long. _____

Data Collector: _____ Date of Collection: _____

1. SCADA Alarms installed on Transformer? (circle) Yes No N/A
2. SCADA Alarms installed on Regulator? (circle) Yes No N/A
3. Shortest distance from substation transformer, regulator or high-side OCB to substation fence _____
4. Shortest distance from substation transformer, regulator or high-side OCB to ANY water (**include on-site storm drain inlets**) _____ Type of Water: (i.e. stream, pond, canal ditch, etc...) _____
5. Is substation in or near National/State Park, Forest, etc? _____ Name _____
6. Is substation located in or adjacent to a wetland; a federal, state or private waterfowl nesting area, or other wildlife management area? _____ Name _____
7. Is substation located where an oil spill could impact a commercial fish, crayfish or shellfish farming operation? _____ Name: _____
8. Is substation located where an oil spill could impact a public or private water supply? _____ Name: _____
9. Is substation in or near residential area? _____ Distance to nearest residence _____
Type of Residential? Single Family Multiple Commercial Other _____
10. Is substation within 100 feet of a school building, daycare facility or playground? _____ Describe: _____
11. Is substation within 100 feet of any other type of building? _____ Describe: _____
12. Is substation within 100 feet of a facility that produces or processes food, feed or food/feed-related products?
Distance to facility? _____ Type/name of facility _____
13. Is Substation within 100 feet of an agricultural field? _____ Distance to field? _____
Type of crop (if known) _____
14. Does the substation have cable tray or other sump pumps? _____
15. Type of surface around Oil-filled Equipment? (Rock, Grass, earth, etc...) If gravel, rock or shell, how deep? _____
16. Type of surface in remainder of substation (if different) _____
17. Are there any existing spill containment, fire quench pits or flood dikes installed? _____
Describe: _____
18. Does substation sit on flat or sloped land? If sloped would oil be likely to run off site in case of spill or pool on site? _____
19. Any known PCB or PCB Contaminated equipment on site? _____
20. Additional Information (use back of form): _____

For Questions call Margaret Snow- Internal # 8-750-5924, External # 501-377-5924, Cell Phone # 501-258-6532
Mail completed form to Margaret Snow at A-TCBY-25E or Fax to 501-377-4041

Revised 04/10/03



IN CONCLUSION:

**COMMUNICATE WITH YOUR
EPA REGIONS DURING
DEVELOPMENT OF YOUR
STRATEGY**